



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,411	04/19/2004	Tsuyoshi Maeda	119275	9894

25944 7590 05/19/2006

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

DUONG, THOI V

ART UNIT	PAPER NUMBER
----------	--------------

2871

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/826,411	MAEDA, TSUYOSHI	
	Examiner	Art Unit	
	Thoi V. Duong	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 ~~is~~ are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>03/02/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the Amendment filed March 02, 2006.

Accordingly, claims 1 and 3 were amended and claims 1-7 are currently pending in this application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (Kaneko, US 2003/0038904 A1) in view of Ha et al. (Ha, US 6,697,138 B2).

Re claim 1, as shown in Figs. 1, 2 and 4, Kaneko discloses a transfective liquid crystal display (LCD) including a plurality of dots, each dot having a reflective display area and a transmissive display area, the transfective liquid crystal display comprising:

an element substrate 2a having a plurality of pixel electrodes 14a with each pixel electrode;

an opposite substrate 2b facing the element substrate 2a;

a liquid crystal layer L disposed between the two substrates 2a and 2b;

a switching element TFD 33 connected to the pixel electrode 14a (Fig. 4); and

a transfective layer 11 provided in the reflective display area of the opposite substrate 2b (page 5, paragraph 74).

Kaneko also discloses that the transfective layer 11 formed from a light reflecting material such as aluminum has an opening formed at a proper position of the transfective film 11 with a proper area ratio for passing the light through in order to achieve the transmissive and reflective functions (paragraph 77).

Accordingly, it is obvious that the reflective display area and the transmissive area of the transfective layer 11 of each dot are separate or in a non-overlapping condition and independent from each other in order to achieve the transmissive and reflective functions.

Fig. 2 of Kaneko shows that the transfective film 11 is formed below the switching element 33. However, Kaneko does not disclose the switching element generating an electric field that causes an alignment disorder of the liquid crystal molecules in the liquid crystal layer and the reflective layer having a portion extending directly below the switching element, the portion shielding from being viewed during transmissive display the alignment disorder of the liquid crystal layer.

As shown in Fig. 4, Ha discloses a transfective liquid crystal display device comprising a reflective layer 181 extending over a switching element T (thin film transistor) to prevent the light from reaching the channel region of the switching element T; Ha also discloses that the black matrix 320 used to prevent light leakage can be omitted because of the utilization of the reflective layer 181 (col. 3, lines 10-13 and col. 6, lines 48-53). Accordingly, it is obvious that, without the black matrix or the reflective layer, when the switching element generates an electric field, the alignment of the liquid crystal molecules in the liquid crystal layer would be in disorder due to the light leakage.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transfective liquid crystal display of Kaneko with the teaching of Ha by having a reflective portion of the transfective film extending directly below the switching element in order to prevent the light from reaching the switching element or the alignment disorder of liquid crystal molecules in the liquid crystal layer during transmission display (col. 6, lines 50-53).

Re claim 5, Kaneko discloses that the switching element TFD 33 is a nonlinear diode element (page 5, paragraph 67).

Re claim 7, as shown in Fig. 8, Kaneko discloses that an electronic device 40 includes the liquid crystal display of Kaneko (page 7, paragraphs 99 and 100).

4. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (Kaneko, US 2003/0038904 A1) in view of Ha et al. (Ha, US 6,697,138 B2) as applied to claims 1, 5 and 7 above, and further in view of Yoon et al. (US 6,717,637 B1).

The transfective LCD of Kaneko further comprises electrode layers 32 and 14b provided on both sides of the liquid crystal layer (Fig. 2 and page 5, paragraphs 70 and 74).

However, Kaneko does not disclose a liquid crystal layer including a liquid crystal with negative dielectric anisotropy and the liquid crystal display further comprising at least one of a slit, opening, and ridge that controls the direction in which liquid crystal molecules of the liquid crystal layer tilt when an applied voltage is changed as recited in claims 2 and 3.

As shown in Figs. 2-4, Yoon discloses a liquid crystal display device comprising a liquid crystal layer including a liquid crystal with a negative dielectric anisotropy and a slit 150 (long central aperture) that controls the direction in which liquid crystal molecules 110 of the liquid crystal layer tilt when an applied voltage is changed (col. 3, line 56 through col. 4, line 26).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the transflective liquid crystal display of Kaneko with the teaching of Yoon by having a liquid crystal layer including a liquid crystal with a negative dielectric anisotropy and a slit that controls the direction in which liquid crystal molecules of the liquid crystal layer tilt when an applied voltage is changed in order to achieve a wide viewing angle for the display (col. 4, lines 24-26).

5. Claims 2, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (Kaneko, US 2003/0038904 A1) in view of Ha et al. (Ha, US 6,697,138 B2) as applied to claims 1, 5 and 7 above, and further in view of Okamoto et al. (Okamoto, US 6,717,637 B1).

The transflective liquid crystal display of Kaneko as modified in view of Ha above includes all that is recited in claims 2, 4 and 6 except for a liquid crystal with negative dielectric anisotropy as recited in claim 2, a circularly polarized light inputting device that inputs circularly polarized light to the element substrate and the opposite substrate as recited in claim 4, and an adjusting layer that makes a thickness of the liquid crystal layer different between the reflective display area and the transmissive display area, the adjusting layer being provided at least in the reflective display area as recited in claim 6.

Re claims 2 and 4, as shown in Fig. 4, Okamoto discloses a transfective liquid crystal display comprising a liquid crystal with negative dielectric anisotropy and a circularly polarized light inputting device 16 and 17 (phase difference compensation plates) that inputs circularly polarized light into the liquid crystal layer 1 (col. 31, line 44 through col. 33, line 38).

Re claim 6, Okamoto further discloses an adjusting layer 11 that makes a thickness of the liquid crystal layer 1 different between the reflective display area 9 and the transmissive display area 10, the adjusting layer 11 being provided at least in the reflective display area 9 (col. 11, lines 44-54 and col. 60, lines 24-47).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the transfective LCD of Kaneko with the teaching of Okamoto by having a liquid crystal with negative dielectric anisotropy and a circularly polarized light inputting device that inputs circularly polarized light to the element substrate and the opposite substrate, and forming an adjusting layer that makes a thickness of the liquid crystal layer different between the reflective display area and the transmissive display area, the adjusting layer being provided at least in the reflective display area in order to attain a high contrast ratio without causing any parallax, and not only to improve the visibility under dark circumstances but also to obtain satisfactory visibility even when the ambient light is strong (col. 13, lines 35-44).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

Art Unit: 2871

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms, can be reached at (571) 272-1787.

Thoi Duong



05/12/2006



DUNG T. NGUYEN
PRIMARY EXAMINER